AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

1-69. (cancelled).

70. (Currently Amended) A cooling system for a computer system processing unit, comprising:

an integrated element, ~~and~~ a heat radiator, and a fan, wherein the integrated element comprises a heat exchanging interface, a reservoir, and a pump;

wherein the reservoir is adapted to receive a cooling liquid from an inlet and pass the cooling liquid to an outlet, the reservoir comprising a plurality of channels adapted to direct flow of the cooling liquid across the heat exchanging interface;

the heat radiator is connected between the outlet and the inlet and is adapted to exhaust heat from the cooling liquid;

the heat exchanging interface is adapted to provide thermal contact between the processing unit and the cooling liquid, such that heat is dissipated from the processing unit to the cooling liquid as the cooling liquid passes across the heat exchanging interface; ~~and~~

the pump being adapted to pump the cooling liquid through the reservoir and the heat radiator, the pump including an AC motor having a rotor, a stator and an impeller having a plurality of ~~curved~~ blades~~, the curvature of the blades being~~ configured to increase an efficiency of the impeller when rotating in a predetermined rotational direction, the impeller being mechanically integrated with the rotor, an AC voltage to operate the motor being generated from a DC power supply of the computer system, a characteristic of the AC voltage directed to the motor during starting of the motor being based at least on an angular position of the rotor and the predetermined rotational direction; and

the fan being configured to direct air through the heat radiator, the fan being driven by a motor separate from the AC motor of the pump.

71. (Previously Presented) The cooling system of claim 70, wherein the impeller is disposed in a recess sized in relation to a diameter of the impeller, and comprising a recess inlet and a recess outlet, wherein the impeller is further adapted to pass the cooling liquid from the recess inlet, through the recess outlet and into the plurality of channels.

72. (Previously Presented) The cooling system of claim 71, wherein the plurality of channels are formed integral to the reservoir or integral to the inner surface of the heat exchanging interface.

73. (Previously Presented) The cooling system of claim 70, wherein the pump is disposed within the reservoir.

74. (Previously Presented) The cooling system of claim 70, wherein the pump is disposed at least partially outside the reservoir.

75. (Previously Presented) The cooling system of claim 71, wherein the recess inlet is disposed proximate the heat exchanging interface and is structurally adapted to generate a turbulent flow of cooling liquid across the heat exchanging interface.

76. (Previously Presented) The cooling system of claim 71, wherein the recess outlet is disposed proximate the heat exchanging interface and is structurally adapted to generate a turbulent flow of cooling liquid across the heat exchanging interface.

77. (Previously Presented) The cooling system of claim 70, wherein the pump comprises a pumping member disposed proximate the heat exchanging interface and is structurally adapted to generate a turbulent flow of cooling liquid across the heat exchanging interface.

78. (Previously Presented) The cooling system of claim 70, wherein the pump comprises one selected from a group consisting of: a bellows pump, centrifugal pump, diaphragm pump, drum pump, flexible liner pump, flexible impeller pump, gear pump, peristaltic tubing pump, piston pump, processing cavity pump, pressure washer pump, rotary lobe pump, rotary vane pump and electro-kinetic pump.

79. (Previously Presented) The cooling system of claim 70, wherein the AC motor is a 12V AC motor.

80. (Currently Amended) The cooling system of claim 70, wherein ~~the cooling system further includes a fan configured to direct a stream of air through the heat radiator,~~ a speed of the fan is configured to be varied independent of a speed of the ~~AC motor~~ impeller of the pump.

81. (Previously Presented) The cooling system of claim 70, wherein the AC voltage directed to the motor is independent of a line voltage powering the DC power supply.

82. (Currently Amended) The cooling system of claim 70, wherein the integrated element is separate from ~~and~~ the heat radiator and are fluidly coupled together by tubing such that the heat radiator can be positioned at a location away from the integrated element when the heat exchanging interface is in thermal contact with the processing unit ~~at two different locations within the computer system, and the heat radiator is fluidly coupled to the inlet and the outlet of the reservoir with connecting tubes~~.

83. (Previously Presented) The cooling system of claim 70, wherein the reservoir further comprises a segmented heat sink disposed in thermal contact with the cooling liquid.

84. (Previously Presented) The cooling system of claim 70, wherein the heat exchanging interface comprises a surface disposed in close thermal contact with the processing unit.

85. (Previously Presented) The cooling system of claim 70, where the heat exchanging interface comprises a surface of the processing unit disposed in direct contact with the cooling liquid.

86. (Previously Presented) The cooling system of claim 70, wherein the heat exchanging interface comprises an element adapted such that when secured to the reservoir the element comprises a part of the reservoir, and further adapted to be separable from the reservoir.

87. (Previously Presented) The cooling system of claim 70, wherein the heat exchanging interface comprises an integrated part of the reservoir disposed in close thermal contact with the processing unit.

88. (Previously Presented) The cooling system of claim 70, wherein the reservoir comprises an aperture exposing the cooling liquid, and wherein the heat exchanging interface comprises a surface of the processing unit adapted to fit into the aperture, such that the surface is disposed in direct contact with the cooling liquid.

89. (withdrawn) A cooling system for an electronic component coupled to a motherboard of a computer system having a heat sink retention mechanism, the retention mechanism including a frame coupled to the motherboard and a brace configured to lockingly attach with the frame, comprising:

a reservoir configured to be coupled to the electronic component using the brace and the frame, the reservoir including,

a heat exchange interface in thermal contact with the electronic component;

an inlet, an outlet, and a chamber fluidly coupled to the inlet and the outlet;

a pump configured to circulate a cooling liquid from the inlet to the outlet; and

a heat radiator fluidly coupled to the inlet and the outlet.

90-94. (cancelled).

95. (withdrawn) A cooling system for a heat generating electronic component of a computer system including a retention mechanism, comprising:

a reservoir lockingly coupled to the electronic component by the retention mechanism, the reservoir being configured to pass a cooling liquid therethrough to remove at least a part of the heat generated by the electronic component;

a pump configured to circulate the cooling liquid between the reservoir and a heat radiator, at least an impeller of the pump being positioned in the reservoir and the speed of the pump configured to be changed in response to a change in a cooling requirement of the computer system; and

a fan configured to direct a stream of air over the heat radiator, the speed of the fan being configured to be changed independent of the speed of the pump to respond to the change in cooling requirement.

96 - 102. (cancelled).

103. (Currently Amended) A cooling system for a computer system processing unit, comprising:

a reservoir configured to be coupled to the processing unit, the reservoir being adapted to pass a cooling liquid therethrough, the reservoir including a heat exchanging interface in thermal contact with the processing unit;

a heat radiator fluidly coupled to the reservoir and configured to be positioned at a location away from the reservoir when the reservoir is coupled to the processing unit; ~~dissipate heat from the cooling liquid to surrounding atmosphere; and~~

a fan adapted to direct air to the heat radiator to dissipate heat from the cooling liquid to surrounding atmosphere;

a pump configured to circulate the cooling liquid between the reservoir and the heat radiator, the pump including an AC motor having a rotor, a stator, and an impeller, the impeller being mechanically coupled to the rotor and at least partially submerged in the cooling liquid in the reservoir, a speed of the impeller being configured to be varied independent of the speed of the fan, the AC motor being powered by a DC power supply of the computer system.

104. (Previously Presented) The cooling system of claim 103, wherein the impeller includes a plurality of blades having a curved shape, the curved shape being configured to increase an efficiency of the impeller when rotating in a predetermined direction.

105. (Previously Presented) The cooling system of claim 104, wherein at a start of the motor, a signal to the motor is based at least partly on an angular position of the rotor, and the signal is configured to rotate the impeller in the predetermined direction.

106. (Previously Presented) The cooling system of claim 103, wherein the AC motor is a 12V AC motor.

107. (Previously Presented) The cooling system of claim 103, wherein at least one of a location of the pump or a configuration of the reservoir is selected to create a turbulence of cooling liquid flow proximate the heat exchanging interface.

108. (Currently Amended) A method of operating a cooling system for an electronic component of a computer system, comprising:

circulating a cooling liquid between a reservoir coupled to the electronic component and a heat radiator using a pump, the pump including a first motor and an impeller mechanically coupled to a rotor of the first motor, the impeller being submerged in the cooling liquid of the reservoir and having a shape configured to increase an efficiency of the impeller when rotating in a predetermined rotational direction;

detecting an angular position of the rotor; ~~and~~

starting the first motor by applying an AC voltage to the first motor from a DC power supply of the computer system, a characteristic of the AC voltage directed to the first motor being selected based on at least the detected angular position and the predetermined rotational direction[[.]]; and

dissipating heat from the heat radiator by directing air therethrough using a fan driven by a second motor separate from the first motor such that a speed of the fan may be varied independently of the speed of the impeller.

109. (Currently Amended) The method of claim 108, wherein the detection of the angular position of the rotor is performed before starting the first motor.

110. (Currently Amended) The method of claim 108, wherein applying an AC voltage to the first motor includes applying an AC voltage to the first motor from a DC power supply of the computer system.

111. (Currently Amended) The method of claim 110, wherein the AC voltage to the first motor is independent of a line voltage used to power the DC power supply.

112. (Currently Amended) The method of claim 108, wherein the reservoir includes a heat exchanging interface, and the method further includes thermally coupling the heat exchanging interface to the electronic component and positioning the heat radiator at a location away from the reservoir.